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09/838,866	04/20/2001	Samuel C. Weaver	5564	3291

7590 02/24/2003  
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EXAMINER	
NGUYEN, SON T	
ART UNIT	PAPER NUMBER
3643	

DATE MAILED: 02/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/838,866

Applicant(s)

WEAVER, SAMUEL C.

Examiner

Son T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Eom et al. (US 5,344,608 on form PTO-1449) in view of Weaver (US 5,573,607 on form PTO-1449).

For claims 1,2,5,9,10, Eom et al. disclose a metal matrix composite horseshoe having improved vibration damping and stiffness (col. 1, lines 6-11, where Eom discuss their metal being excellent in abrasion resistance, shock absorption and ductile), the horseshoe comprising a metal matrix composite that is formed from a molten metal selected from the group consisting of aluminum, magnesium, titanium and mixtures thereof (col. 1, lines 58-61, cols. 2,3,4, all lines). However, Eom et al. are silent about particles of silicon boride composition selected from the group consisting of silicon tetraboride, silicon hexaboride and mixtures thereof, said silicon boride composition being present in a range from about 0.1 to about 80 weight percent in said molten metal. Weaver teaches that light weight metals such as aluminum and magnesium are highly in demand and have been used in a wide variety of industries which employ metal as a material (col. 1, lines 19-25). Since these alloys have some negative drawbacks, Weaver has developed a better metal matrix composites for these

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industries to employ. Weaver's matrix is formed from a molten metal consisting of aluminum, magnesium, titanium, and mixtures thereof and particles of silicon boride consisting of silicon tetraboride, silicon hexaboride and mixtures thereof, the silicon boride being present in a range from about 0.1 to about 80 weight percent in the molten metal (see claim 1 of Weaver). Weaver's matrix is very manageable, can be easily re-melted and yet maintaining its strength and hardness. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ silicon boride and/or its variations, such as silicon hexaboride, and being present in a range from about 0.1 to about 80 weight percent as taught by Weaver in the metal matrix composite horseshoe of Eom et al. in order to strengthen the metal matrix (col. 1, lines 8-14 of Weaver).

For claims 3,11, Weaver further discloses that the silicon hexaboride having an average particle size of about 0.1 to about 200 micrometers (col. 2, lines 38-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate about 0.1 to about 200 micrometers of the silicon hexaboride as taught by Weaver in the metal matrix of Eom et al. as modified by Weaver, since it has been held that where routine testing and general experimental conditions are present, discovering the optimum or workable ranges until the desired effect is achieved involves only routine skill in the art. In re Aller, 105 USPQ 233.

For claims 4,12, Weaver further discloses the silicon hexaboride having an average particle size of about 20 micrometers (col. 2, lines 38-40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to

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incorporate about 20 micrometers of the silicon hexaboride as taught by Weaver in the metal matrix of Eom et al. as modified by Weaver, since it has been held that where routine testing and general experimental conditions are present, discovering the optimum or workable ranges until the desired effect is achieved involves only routine skill in the art. In re Aller, 105 USPQ 233.

For claim 6, both Eom et al. and Weaver teach the metal being aluminum.

For claims 7,13, Eom et al. as modified by Weaver are silent about the silicon boride being present in a range from about 10 to about 45 weight %. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate about 10 to about 45 weight % of the silicon boride in the metal matrix of Eom et al. as modified by Weaver, since it has been held that where routine testing and general experimental conditions are present, discovering the optimum or workable ranges until the desired effect is achieved involves only routine skill in the art. In re Aller, 105 USPQ 233.

For claims 8,14, Eom et al. as modified by Weaver are silent about the silicon hexaboride being present in a range from about 10 to about 45 weight %. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate about 10 to about 45 weight % of the silicon hexaboride in the metal matrix of Eom et al. as modified by Weaver, since it has been held that where routine testing and general experimental conditions are present, discovering the optimum or workable ranges until the desired effect is achieved involves only routine skill in the art. In re Aller, 105 USPQ 233.

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For claims 15,16, see the above paragraphs.

***Response to Arguments***

3. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection. However, arguments which are relevant to the Weaver607 reference will be addressed herein.

**Applicant argued that Weaver607 does not teach improved vibration damping and stiffness as now required in the amended claim 1.** A new rejection has been made due to the amendment filed 1/14/03. Eom et al. as modified by Weaver607 teach a metal matrix composite horseshoe which improves vibration damping and stiffness (col. 1, lines 6-11 of Eom et al. and col. 1, lines 8-14 of Weaver607).

**Applicant argued that the present invention addresses a long felt need in the prior art for an improved horseshoe.** There is no showing that others of ordinary skill in the art were working on the problem and if so, for how long. In addition, there is no evidence that if persons skilled in the art who were presumably working on the problem knew of the teachings of the above cited references, they would still be unable to solve the problem. See MPEP § 716.04. The examiner has considered the Declaration of Mr. Samuel C. Weaver mailed on 1/14/03; however, in regard to the combination of Eom et al. as modified by Weaver607, the examiner believes that the present invention is clearly taught by this combination and thus, the declaration does not overcome the 103 rejection.

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**Applicant argued that there is no teaching in the 607 patent that would lead one skilled in the art to produce a horseshoe with improved vibration damping and stiffness.** The metal matrix composite of the 607 patent contains the same ingredients as that claimed by the present invention, therefore, it should also improve vibration damping and stiffness even if the 607 patent does not state so (capable of performing the same function).

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son T. Nguyen whose telephone number is (703) 305-0765. The examiner can normally be reached on Monday - Friday from 9:00 a.m. to 5:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Poon, can be reached at (703) 308-2574. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.



Son T. Nguyen  
Patent Examiner, GAU 3643  
February 24, 2003